

United States Department of the Interior  
National Park Service

# National Register of Historic Places Registration Form



377

1. Name of Property

Historic name: N/A  
Other name/site number: Little Walnut River Pratt Truss Bridge (preferred); 08-HT-05

2. Location On SW 160<sup>th</sup> Road, 0.5 miles west of the intersection with Purity Springs Road.

not for publication  
city or town Bois D'Arc N/A vicinity  
state code KS county Butler county code 015 zip code 67010

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property meets does not meet the National Register criteria. I recommend that this property be considered significant nationally statewide locally. (See continuation sheet for additional comments.)

Richard D. Pauckatz 3/26/03  
Signature of certifying official Date

State or Federal agency and bureau

In my opinion, the property meets does not meet the National Register criteria.  
(See continuation sheet for additional comments.)

Signature of commenting or other official Date

State or Federal agency and bureau

4. National Park Service Certification

I, hereby, certify that this property is  
 entered in the National Register. Edson R. Beall 5/9/03  
See continuation sheet  
 determined eligible for the National Register.  
See continuation sheet  
 determined not eligible for the National Register.  
 removed from the National Register.  
 other, (explain:)

for Signature of Keeper Date of Action

United States Department of the Interior  
National Park Service

# National Register of Historic Places Registration Form

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Other name/site number: Little Walnut River Pratt Truss Bridge (preferred); 08-HT-05

**2. Location** On SW 160<sup>th</sup> Road, 0.5 miles west of the intersection with Purity Springs Road.

publication \_\_\_\_\_ not for

city or town Bois D'Arc N/A vicinity

state code KS county Butler county code 015 zip code 67010

**3. State/Federal Agency Certification**

As the designated authority under the National Historic Preservation Act of 1986, as amended, I hereby certify that this XX nomination request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60. In my opinion, the property XX meets does not meet the National Register criteria. I recommend that this property be considered significant XX nationally XX statewide XX locally. (See continuation sheet for additional comments.)

Richard D. Panbratz 4/10/03  
Signature of certifying official Date

**KANSAS STATE HISTORICAL SOCIETY**

State or Federal agency and bureau

In my opinion, the property \_\_\_\_\_ meets \_\_\_\_\_ does not meet the National Register criteria. (See continuation sheet for additional comments.)

Signature of commenting or other official Date

State or Federal agency and bureau

**4. National Park Service Certification**

I, hereby, certify that this property is:

- entered in the National Register.  
See continuation sheet
- determined eligible for the National Register.  
See continuation sheet
- determined not eligible for the National Register.
- removed from the National Register.
- other, (explain:)

Signature of Keeper

Date of Action

Property Name Little Walnut River Pratt Truss Bridge

County and State Butler, Kansas

**5. Classification**

Ownership of Property	Category of Property	No. of Resources within Property	
		contributing	noncontributing
<input type="checkbox"/> private	<input type="checkbox"/> building(s)	<input type="checkbox"/>	<input type="checkbox"/> buildings
<input checked="" type="checkbox"/> public-local	<input type="checkbox"/> district	<input type="checkbox"/>	<input type="checkbox"/> sites
<input type="checkbox"/> public-State	<input type="checkbox"/> site	<input type="checkbox"/>	<input type="checkbox"/> structures
<input type="checkbox"/> public-Federal	<input checked="" type="checkbox"/> structure	<u>1</u>	<input type="checkbox"/> objects
	<input type="checkbox"/> object	<u>1</u>	<u>0</u> Total

Name of related multiple property listing:  
(Enter "N/A" if property is not part of a  
multiple property listing.):

No. of contributing resources previously  
listed in the National Register

Metal Truss Bridges in Kansas

0

**6. Functions or Use**

Historic Functions  
(Enter categories from instructions.)

Current Functions  
(Enter categories from instructions.)

TRANSPORTATION: Road-related (vehicular)

TRANSPORTATION: Road-related (vehicular)

**7. Description**

Architectural Classification  
(Enter categories from instructions.)

Materials  
(Enter categories from instructions.)

OTHER: Pratt Truss

Foundation Limestone, Concrete

Walls \_\_\_\_\_

Roof \_\_\_\_\_

Other Metal: Iron, Steel

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

Property Name Little Walnut River Pratt Truss Bridge

County and State Butler, Kansas

**8. Statement of Significance**

Applicable National Register Criteria (Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

- A Property is associated with events that have made a significant contribution to the broad patterns of our history.
- B Property is associated with the lives of persons significant in our past.
- C Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- D Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations (Mark "x" in all the boxes that apply.)

- A owned by a religious institution or used for religious purposes.
- B removed from its original location.
- C a birthplace or a grave.
- D a cemetery.
- E a reconstructed building, object, or structure.
- F a commemorative property.
- G less than 50 years of age or achieved significance within the past 50 years.

Areas of Significance  
Enter categories from instructions.)

ENGINEERING

TRANSPORTATION

Period of Significance

1885

Significant Dates

1885

Cultural Affiliation

N/A

Significant Person

N/A

Architect/Builder

Kansas City Bridge & Iron Company (Kansas City, Missouri)

Narrative Description (Describe the historic and current condition of the property on one or more continuation sheets.)

Property Name Little Walnut River Pratt Truss Bridge

County and State Butler, Kansas

**9. Major Bibliographical References**

(Cite the books, articles, and other sources used in preparing this form on one or more continuation sheets.)

Previous documentation on file (NPS):

- preliminary determination of individual listing (36 CFR 67) has been requested
- previously listed in the National Register
- previously determined eligible by the National Register
- designated a National Historic Landmark
- recorded by Historic American Buildings Survey # \_\_\_\_\_
- recorded by Historic American Engineering

Primary location of additional data:

- State Historic Preservation Office
- Other State agency
- Federal agency
- Local government
- University
- Other

Specify repository:

Record # \_\_\_\_\_

**10. Geographical Data**

Acreage of property <1 acre

UTM References

1	<u>1/4</u>	<u>6/8/3/3/4/0</u>	<u>4/1/6/2/8/4/0</u>	3	<u>/</u>	<u>/ / / / /</u>	<u>/ / / / /</u>
	Zone	Easting	Northing		Zone	Easting	Northing
2	<u>/</u>	<u>/ / / / /</u>	<u>/ / / / /</u>	4	<u>/</u>	<u>/ / / / /</u>	<u>/ / / / /</u>

\_\_\_ See continuation sheet

Verbal Boundary Description (Describe the boundaries of the property on a continuation sheet.)

Boundary Justification (Explain why the boundaries were selected on a continuation sheet.)

**11. Form Prepared By**

name/title Kerry Davis, Architectural Historian & Elizabeth Rosin, Partner

organization Historic Preservation Services date August 5, 2002

street & number 323 West Eighth Street, Suite 112 telephone (816) 221-5133

city or town Kansas City state Missouri zip code 64105

**Additional Documentation**

Submit the following items with the completed form:

Continuation Sheets

Maps

A USGS map (7.5 or 15 minute series) indicating the property's location.

A sketch map for historic districts and properties having large acreage or numerous resources.

Photographs

Representative black-and-white photographs of the property.

Additional items (Check with the SHPO or FPO for any additional items.)

**Property Owners** (Complete this item at the request of the SHPO or FPO.)

Name County of Butler

street & number 205 West Central, Room 105 telephone 316-322-4101

city or town El Dorado state KS zip code 67042

United States Department of the Interior  
National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES  
CONTINUATION SHEET**

Section Number 7 Page 1

Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

**DESCRIPTION**

**LOCATION AND SETTING**

The Little Walnut River Pratt Truss Bridge is located in the hamlet of Bois D'Arc in the southern part of the Flint Hills region of east-central Kansas; in the SE ¼ of Section 19, Township 28S, Range 5E. The region is defined by rolling prairie hills with deep, tree-lined creek valleys and rocky bluffs. The Little Walnut River Pratt Truss Bridge carries SW 160<sup>th</sup> Road across the Little Walnut River, a wide and shallow branch of the Walnut River. The gravel roadway, flanked by cultivated fields, aligns in an "L" bend with the Little Walnut River Pratt Truss Bridge. Traveling from the west, the roadway makes a bend northeast to the hamlet of Bois D'Arc before making a sharp bend southeast to cross the Little Walnut River.

The timber deck is 14 feet wide and rises 21 feet above the creek bed on steel I-beam stringers. Floor beams at the base of each vertical post are connected by lower lateral bracing rods. The historic lattice guardrails are intact along the length of each truss; a combination of non-historic metal and timber guardrails flank the approach grades. Letters in relief read "CARNEGIE" on several structural components.

**TRUSS TYPE**

The Little Walnut River Pratt Truss Bridge consists of a pin-connected Pratt through truss<sup>1</sup> span that measures 102 feet in length, a pin-connected Pratt pony truss<sup>2</sup> span that measures 75 feet in length, and a flat, girder northwest approach span that measures 20 feet in length. The deck is 14 feet wide. Rough-cut, coursed limestone abutments support the outer ends of the approach and pony truss spans. Two rough-cut, coursed limestone piers support the northwest end of the pony truss and the bearings of the through truss. The side walls of the abutments extend at least 40 feet along each approach grade. Low, poured concrete walls reinforce the riverside base of each pier.

**Through Truss** – The inclined end posts rise from the bottom chords to meet the horizontal top chords to form a trapezoidal shape. The top chords and end posts consist of two channels, a top plate, and stay plates; the bottom chords consist of paired flat eye bars. The web members consist of vertical posts and paired bars that form six equivalent panels and diagonal ties that intersect within the two central panels. Channel stock and lacing bars compose the posts; flat eye bars and tension rods compose the ties.

A system of intersecting, riveted angle stock and lacing bars forms the portal; channel stock forms the sway struts that connect the top chords at each vertical post, leaving a vertical clearance of approximately 14 feet. Upper lateral bracing rods intersect diagonally between the top chords. Identical rectangular plaques at the center of each portal strut read "KANSAS CITY / BRIDGE & IRON / CO. 1885"

**Pony Truss** – The inclined end posts rise from the bottom chords to meet the horizontal top chords to form a trapezoidal shape. The top chords and end posts consist of two channels, a top plate, and lacing bars; the bottom chords consist of paired flat eye bars. The web members consist of vertical posts that form five equivalent panels

<sup>1</sup> A through truss is also referred to as a high truss.

<sup>2</sup> A pony truss is also referred to as a low truss.

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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

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and diagonal ties that intersect within the center panel. Angle stock and lacing bars compose the posts; flat eye bars and tension rods compose the ties.

**INTEGRITY**

The Little Walnut River Pratt Truss Bridge is an excellent example of this bridge type, historically the most popular in Kansas.<sup>3</sup> The c.1990 concrete reinforcements at the pier bases do not significantly affect the integrity of the Little Walnut River Pratt Truss Bridge. Apart from this minor addition, the original workmanship, materials, design, setting, and feeling of the property are readily apparent. Furthermore, the potential for preservation of the bridge is high. Located on a lightly traveled road, it is unlikely that traffic requirements will necessitate alteration or replacement.

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<sup>3</sup> Larry Jochims, *Metal Truss Bridges in Kansas 1861-1939, National Register of Historic Places Multiple Property Documentation Form*, (Topeka: Kansas State Historical Society, 1989), E1. Jochims states approximately 262 Pratt trusses extant in Kansas. Dale Nimz, *Activity III Review Initial Assessment Metal Truss Bridges*. (Topeka: Kansas State Historical Society, 1998), 6. Nimz identifies approximately 800 Pratt trusses extant in Kansas.

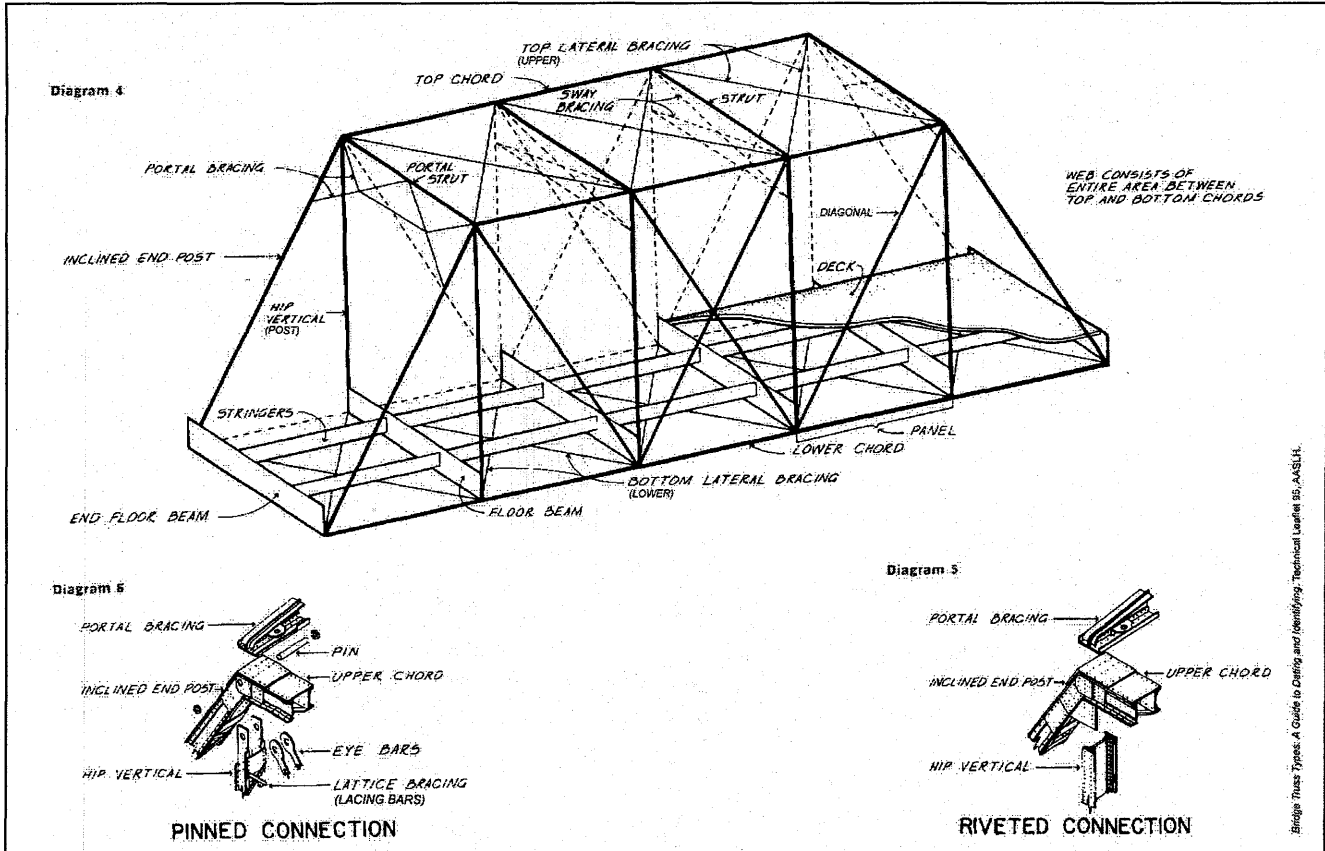
United States Department of the Interior  
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**NATIONAL REGISTER OF HISTORIC PLACES  
CONTINUATION SHEET**

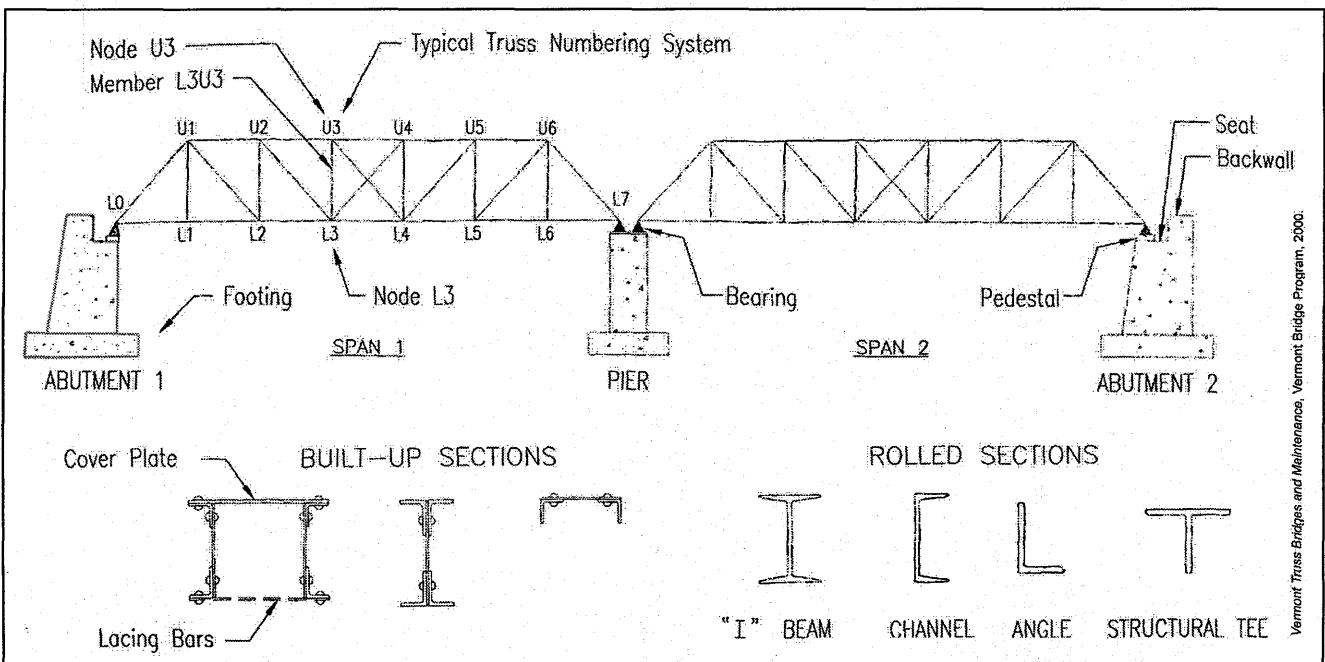
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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

**TRUSS TERMINOLOGY**



Bridge Truss Types: A Guide to Dating and Identifying, Technical Leaflet 10, ASLH.



Vermont Truss Bridges and Maintenance, Vermont Bridge Program, 2000.



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National Park Service

**NATIONAL REGISTER OF HISTORIC PLACES  
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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

**STATEMENT OF SIGNIFICANCE**

The Little Walnut River Pratt Truss Bridge is significant under National Register Criterion C in the areas of Engineering and Transportation. As defined in the *Multiple Property Documentation Form for Metal Truss Bridges in Kansas*, it is an excellent example of the Pratt Truss bridge type. Built in 1885, the Little Walnut River Pratt Truss Bridge is an example of a common bridge solution applied to a relatively long span: incorporating both a through and a pony truss. Its pin-connected construction and limestone abutments and piers illustrate typical construction techniques and materials during the period of significance. As no historic name identifies this bridge, the preferred name "Little Walnut River Pratt Truss Bridge" has been assigned. This describes and identifies the location, design, and function of the structure.

**ELABORATION**

The need for all-weather crossings of rivers and streams corresponded to the growth of the market economy across Kansas during the late nineteenth and early twentieth centuries. Bridges provided farmers easy access to markets and could make the difference between growth and stagnation for the many small, young communities across the state.<sup>1</sup> Proximity to a bridge often secured a town's economic stability, and it contributed to a local sense of modernity.

Prior to the 1930s, the railroad was the primary means of long-distance travel and there was little need for roads to extend more than a few dozen miles. With little stimulus for improved long-distance roads that would cross multiple jurisdictions, road construction and maintenance remained local concerns. County commissioners often carried the burden of selecting bridge locations, over which much contention was common.

The range of choices for bridge designs and companies was vast. Many of the larger bridge companies sold metal truss bridges through mail order catalogues. County commissioners could simply specify the span, clearance needs, and truss type (if there was a preference), then choose the lowest bidder from the numerous competing companies who had salesmen in the field.

By the late nineteenth century, fabrication of iron and steel was widespread. The speed of construction and the relatively low cost of metal truss bridge parts ensured their popularity over labor-intensive masonry bridges and short-lived timber bridges. Toward the end of the nineteenth century, the quality, quantity, and cost of steel improved to such a degree that it virtually replaced wrought iron for bridge construction by 1910.<sup>2</sup>

Most metal trusses were constructed of built-up members composed of mass-produced, standard-shaped channel, plate, and angle stock purchased from one or more of the numerous steel companies nationwide. The bridge companies preassembled trusses in their factories then simply shipped them to the bridge site for installation. Installation involved grading approaches, constructing abutments and piers, erecting preassembled floor and truss members, and placing deck material.

<sup>1</sup> Jochims, E.

<sup>2</sup> Ibid, F.

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**NATIONAL REGISTER OF HISTORIC PLACES  
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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

Before 1900, generally all panel point connections – the locations at which structural bridge elements intersect – were made with the use of a pin. This technique was so widespread that it became one of the distinctive features of American bridge construction in the nineteenth century.<sup>3</sup> The pin-connected construction of the Little Walnut River Pratt Truss Bridge illustrates the standard use of this technique. However, subsequent advancements in pneumatic riveting techniques greatly improved rivet installation quality, enabling more reliable panel point connections. With the increased portability of this construction technology, the more rigid riveting technique rapidly surpassed pin-connected bridge construction during the first years of the twentieth century.

In addition, the contemporary development of economic cement production promoted the widespread combination of steel and concrete in bridge construction. It was not uncommon for older metal truss bridges to receive new reinforced concrete decks or poured concrete reinforcements for older stone abutments. By the 1920s, reinforced concrete was the standard material for abutments, piers, and decks of steel truss bridges. The limestone abutments and piers of the Little Walnut River Pratt Truss Bridge are typical of bridges built during the period of significance, prior to the standardization of concrete as a construction material.

The Little Walnut River Pratt Truss Bridge is a classic example of this truss design. Patented in 1844, the Pratt truss incorporates vertical members in compression and diagonal members in tension, a design that reduces the required length of compression members, helping to prevent bending or buckling.<sup>4</sup> Visually, the compression and tension members of a pin-connected Pratt truss are clearly different, with the thin diagonal members in tension and the vertical posts in compression. The Pratt truss became the most common bridge type of the late nineteenth and early twentieth centuries and spawned numerous design variations including Parker, Camelback, Baltimore, Lenticular, and Pennsylvania trusses.<sup>5</sup>

In Kansas, Pratt truss bridges were constructed well into the twentieth century, suggesting the appeal of the design's strength and economical construction costs.<sup>6</sup> In 1998, approximately 800 Pratt truss bridges, including the Little Walnut River Pratt Truss Bridge, existed throughout the state of Kansas.<sup>7</sup>

**STRUCTURE HISTORY**

The hamlet of Bois D'Arc is located within Bloomington Township, which was first settled in 1867 by farmers and stock raisers attracted to the fertile bottomlands of the Little Walnut River. By 1880, Bloomington Township had grown to 593 residents, the thirteenth most populated of the twenty-nine townships in Butler County.<sup>8</sup> According to the *El Dorado Republican*, the Little Walnut River crossing, at what is now Bois D'Arc, was originally known as Elder's Ford.<sup>9</sup> The same article indicates that "a good wheat and corn mill [was recently]

<sup>3</sup> Ibid, F.

<sup>4</sup> T. Allan Comp and Donald Jackson, *Bridge Truss Types: A guide to dating and identifying*. (Nashville, Tennessee: American Association for State and Local History, Technical Leaflet 95), 8.

<sup>5</sup> Ibid, 8.

<sup>6</sup> Jochims, F2.

<sup>7</sup> Nimz, 6.

<sup>8</sup> William G. Cutler, *History of The State of Kansas: Butler County*, Chicago: A. T. Andreas, 1883, Part 1.

<sup>9</sup> *El Dorado Republican*, 2 October 1885, p1 c4.

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**NATIONAL REGISTER OF HISTORIC PLACES  
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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

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built by Mr. Bradford, a Kentuckian," at this crossing. Although a town had not yet been organized, the significance of this crossing to the surrounding agricultural community is illustrated by the construction of the Little Walnut River Pratt Truss Bridge. Typical of rural areas throughout Kansas with numerous creeks and washes, fords and bridges that allowed access to local markets were critical to the survival of the regional economy.

The Kansas City Bridge and Iron Company of Kansas City, Missouri, a prolific out-of-state bridge builder in Kansas, built the Little Walnut River Pratt Truss Bridge. Markings on the structural members indicate that Kansas City Bridge and Iron Company purchased the stock metal from Carnegie Steel Company of Pittsburgh, Pennsylvania. Organized between 1880 and 1882, Kansas City Bridge and Iron Company was controlled in 1887 by G. H. Wheelock, president; A. M. Blodgett, vice president; and E. I. Farnsworth, chief engineer. Farnsworth was previously chief engineer for King Iron Bridge Company and a co-founder of Missouri Valley Bridge Company of Leavenworth, Kansas.<sup>10</sup>

Identification plaques affixed to the Little Walnut River Pratt Truss Bridge state that it was constructed in 1885. However, both the *El Dorado Republican* and the *Walnut Valley Times* indicate that construction of the Little Walnut River Pratt Truss Bridge was to begin upon the completion of a bridge at Gordon, Kansas, which was still incomplete as late as November 1885. No further construction history has presently been located.<sup>11</sup>

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<sup>10</sup> Jochims, E3.

<sup>11</sup> Inquiry into the Butler County Road and Bridge records, Kansas Department of Transportation records, and Kansas State Historical Society archives revealed no further construction history specific to the Little Walnut River Pratt Truss Bridge.

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**NATIONAL REGISTER OF HISTORIC PLACES  
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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

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**BIBLIOGRAPHY**

Comp, T. Allan and Donald Jackson. *Bridge Truss Types: A guide to dating and identifying*. Nashville, Tennessee: American Association for State and Local History, Technical Leaflet 95.

Cutler, William G. *History of the State of Kansas*. Chicago: A. T. Andreas, 1883.

*Delaware Historic Bridges, Survey and Evaluation*. Historic Architecture and Engineering Series, No. 89. Dover: Delaware Department of Transportation, Division of Highways, 1991.

“Gordon Gleanings.” *Walnut Valley Times*, 20 November 1885, 2.

*Historic Bridge Inventory*. Kansas Department of Transportation, 17 February 1981.

*Historic Highway Bridges in Pennsylvania*. Harrisburg: Pennsylvania Department of Transportation and Pennsylvania Historical and Museum Commission, 1986.

“Industrial Images from the Library of Congress,” *Illustrated Pittsburgh Retrospective* [article on-line]; available from <http://www.andrew.cmu.edu/user/vck/pghretro.htm>; Internet; accessed 18 March 2002.

Jochims, Larry. *Metal Truss Bridges in Kansas 1861-1939, National Register of Historic Places Multiple Property Documentation Form*. Topeka: Kansas State Historical Society, 1989.

Jochims, Larry. *Riley Creek Bridge, National Register of Historic Places Registration Form*. Topeka: Kansas State Historical Society, 1989.

*Kansas Historic Bridge Rating System*. Kansas Department of Transportation, 1980-1983.

Nimz, Dale E. *Activity III Review Initial Assessment Metal Truss Bridges*. Topeka: Kansas State Historical Society, 1998.

*Second Ohio Historic Bridge Inventory, The: Evaluation and Preservation Plan*. Columbus: Ohio Department of Transportation, 1990.

“Southern Butler.” *El Dorado Republican*, 2 October 1885, 1.

*Vermont Truss Bridges and Maintenance*. Vermont Bridge Program, 2000.

*WPA Guide to 1930s Kansas*. Lawrence: University of Kansas Press, 1984.

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Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

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**GEOGRAPHICAL DATA**

**Verbal Boundary Description:**

Located on the SE  $\frac{1}{4}$  of Section 19, Township 28S, Range 5E, the Little Walnut River Pratt Truss Bridge encompasses an area measuring approximately 197 feet by 14 feet. The northwest corner of this area corresponds to the northwest corner of the bridge.

**Boundary Justification:**

The boundary includes the truss, deck, abutments, and associated approaches that represent the significant features associated with the bridge structure.

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**NATIONAL REGISTER OF HISTORIC PLACES  
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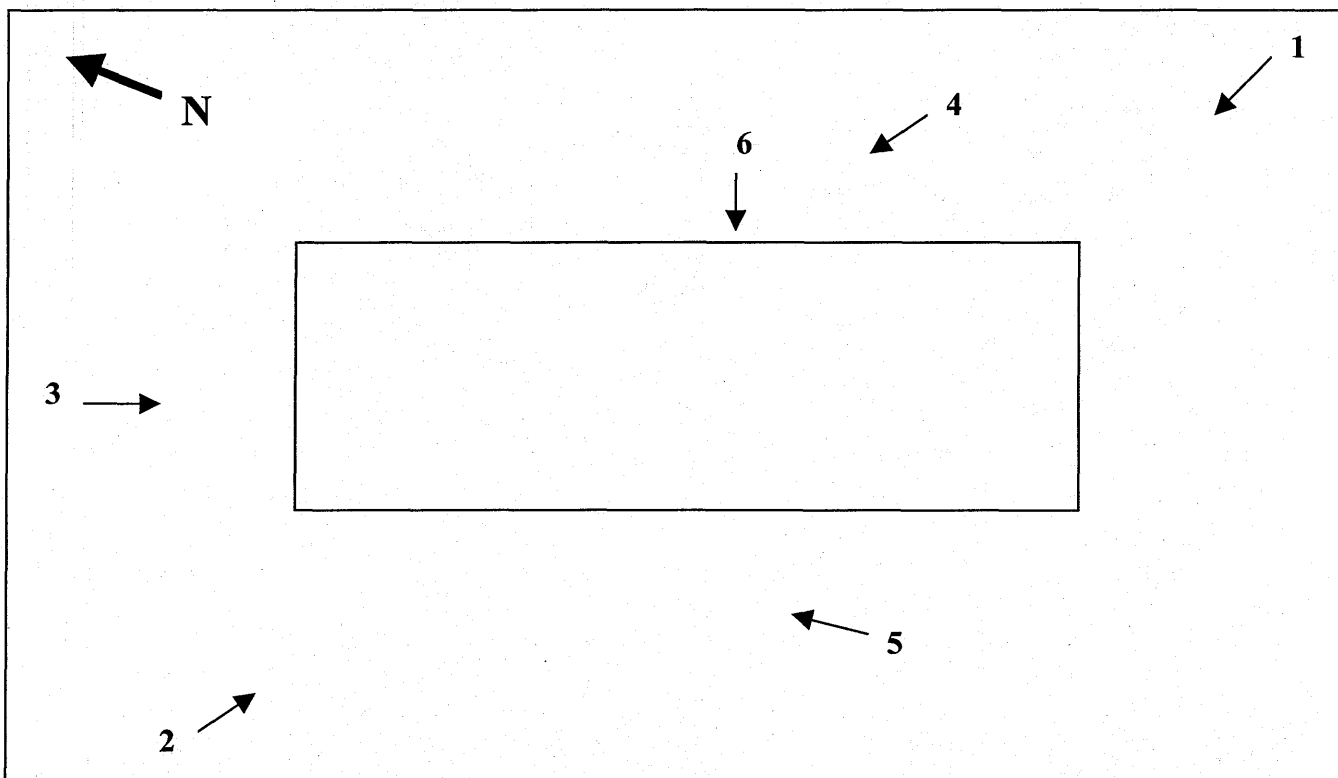
Section - Photographic Documentation Page 9

Little Walnut River Pratt Truss Bridge  
Butler County, Kansas

**PHOTO LOG**

Photographer: Kerry Davis  
Date of Photographs: February 2002  
Location of Original Negative: Kansas State Historical Society, Topeka, Kansas

Photograph Number	Camera View
1.	View W, bridge trusses, abutments, and pier
2.	View E, bridge trusses and pier
3.	View SE, bridge trusses and roadway
4.	View NW, bridge under structure, pier, and northwest abutment
5.	View N, northwest abutment
6.	View SW, bearings detail



STATE OF KANSAS

